Multilingual Telephone System for Patient Outreach and Health Education

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Abbreviated Abstract

Pilot-testing of multilingual telephone health outreach messages for limited English proficiency (LEP) and low functional health literacy (FHL) populations

LEP status contributes to a range of adverse health outcomes, including greater likelihoods of hospital admission, misdiagnosis, and incorrect treatment. Though numerous studies have shown that health-related Interactive Voice Response (IVR) messages contribute to positive health outcomes and can address the deficiencies associated with the use of printed brochures, the overwhelming majority of IVR interventions conducted to-date target English-speaking patients. The objective of this pilot study was to develop a set of multilingual voice messages and evaluate their efficacy for cancer-related education for LEP patients. Sample messages were crafted, translated into Spanish and Chinese, and rendered into audio recordings. A representative sample of LEP individuals (N=50) and healthcare providers (N=26) were recruited to listen to messages in group sessions and evaluate the messages via knowledge acquisition tests and Likert-scale questionnaires. Knowledge was measured at baseline, immediately post-listening, and 7-10 days later.

Results & Discussion: *Knowledge Acquisition and Retention* (N=50): Pre-test - 54%, Post-test - 88%, Retention test - 81%. The overwhelming majority of LEP participants (90%) and healthcare providers (91%, N=26) stated the messages were an effective means to communicate important health information. *Adoptability* - 81% of LEP participants agreed they would listen to language-concordant health education message via the telephone; 96% of providers would use a message system if available in their clinic/hospital.

Conclusion: This study demonstrated not only efficacy and adoptability but also allowed us to develop best practice guidelines for message creation and delivery. Language-concordant, culturally sensitive telephone messages have the potential to reduce health disparities by improving health literacy and enhancing disease management for LEP and low FHL patient populations. Building upon these findings, a Phase II randomized-controlled trial is underway to determine the efficacy of voice messages as an adjunct to a community outreach program for Filipino, Chinese and Korean patients.

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Total Budget

$1,234,197

Research Objectives

AIMS

1) Identify user requirements and best practices in multilingual outreach via secondary research and small group discussions with healthcare and outreach professionals; incorporate findings to create a sample set of appointment reminders and educational voice messages concerning cancer prevention and nutrition in English, Spanish, and Chinese (Mandarin and Cantonese).
2) Evaluate the ability of sample messages to convey health information, and improve health knowledge and self-efficacy for monolingual Spanish and Chinese speakers; evaluate the adoptability of multilingual, interactive voice messages for healthcare providers and LEP populations.
3) Expand the library of voice messages to extend to additional diseases and populations; evaluate the messages through a pilot intervention study on cardiovascular health in the Filipino community and hepatitis B vaccine compliance among the Chinese and Korean population.

Theory/Hypothesis

By creating an interactive communication channel between patients and providers, our library of messages will fill a void in effective outreach solutions for LEP populations. This message system will address the deficiencies inherent in using printed brochures as the dominant means of disseminating health information, as well as expedite the information delivery process between health outreach workers and their patients.

Experimental Design

Quantitative (pre-, post-, and retention testing of knowledge acquisition and attitudinal change; Likert-scale rating of message efficacy, appeal and adoptability) and qualitative (small discussion groups) analyses were conducted with Hispanic and Chinese LEP participants from the New York metropolitan area in Phase I. A qualitative assessment was also conducted among metropolitan area healthcare and outreach workers.

The Phase II pilot interventions will comprise two randomized-controlled studies involving Filipino hypertensive patients and Chinese and Korean clinic patients receiving HBV vaccines. The use of VoiceReach messages (intervention) will be compared against standard of care and health education using a community health worker model (control).

Final Sample Size & Study Demographics

Phase I: A total of 76 participants, ages 24-72, were recruited throughout the New York metropolitan area Phase I testing: 17 monolingual speakers of Latin-American Spanish, 18 monolingual Cantonese speakers, and 15 monolingual Mandarin speakers. Educational attainment ranged from elementary school to country-of-origin college education, and length of time in the U.S. ranged from 6mos-20yr+. The remaining participants were English-speaking healthcare providers (N=26).

Phase II: The current pilot intervention is expect to be comprised of 100 hypertensive Filipino patients (100 cases, 0 controls) and 150 Chinese and Korean individuals (75 cases, 75 controls) enrolled in a hepatitis B prevention program.

Selection criteria for all participants in focus groups and subjects for field observation include the following:

- Both male and female participants were recruited; efforts were made to ensure a male to female ration of 1 to 1.
- No potential participants were excluded on the basis of race, ethnicity or national origin.
- Participants will constitute a representative sample of the pertinent populations and will be sought to represent varying educational backgrounds.
- Adolescent and child participants under the age of 21 are excluded because it is uncommon that they would seek medical care without the accompaniment of adults.

Criteria specific to Phase I:

- No individual with any particular health condition or ailment was sought or excluded from the research.
- Within both LEP and healthcare provider groups, efforts were made to ensure that participants constitute a representative sample of the pertinent population. Healthcare providers with various job functions and specialties were recruited.

Criteria specific to Phase II (in progress):

For the hypertensive Filipino patient intervention group,

- The participants must be of Filipino descent between the ages of 35-70 years old; have resided in the United States 15 years or fewer; and be remaining in the United States continuously for the next year.
- The participant must be identified as having a high blood pressure reading (systolic>130, diastolic >85) -- these readings were selected because of the frequent presence of metabolic syndrome in the Filipino population;
- The participant cannot be on renal dialysis; cannot have an acute or terminal illness or serious mental illness, and may not be participating in another hypertension or CVD study.

For the hepatitis B vaccine intervention group,

- The participant must be a Mandarin, Cantonese, or Korean speaker who has resided in the United States 15 years or fewer; and will remain in the United States continuously for the next year.

- The participant must be identified in need of an HBV vaccination series and must be enrolled in the New York City B-Free Program to receive HBV immunization.

Data Collection Methods

Questionnaires consisting of multiple choice and Likert-type questions were administered to all LEP participants at baseline, immediately following exposure to the voice messages, and 7-10 days subsequent to hearing the messages. Qualitative data were collected via language-concordant discussion groups led by experienced facilitators. This information was recorded on-site and analyzed by the research staff. Respondents' anonymity was maintained throughout the data collection process.

Outcome Measures

The messages were evaluated in regards to:

- *Efficacy and Adoptability*—LEP participants completed pre-, post- and retention tests to assess their knowledge gain and attitudinal change as a result of listening to the messages. In addition, the messages were tested for efficacy, adoptability and overall appeal among LEP and healthcare provider participants. Likert-type statements were rated on a scale of 1-5 where a rating of 4 or 5 was defined as a favorable result.
- *Message content, format and style, and potential delivery options*—Messages were discussed in groups to explore the type of information patients would benefit from receiving in voice message form, the appropriate length (e.g., 30sec-3min) and style (i.e., didactic, narrative, dialog, etc) of a message, the participants' preferences regarding the message speakers' profile, and the participants' preferences on delivery times and options.

Evaluation Methods

Criteria from the RE-AIM framework—a comprehensive method for evaluating community intervention programs—were used. A two-thirds or greater favorable approval rating from both the healthcare and LEP participants was set as the benchmark for demonstrating feasibility of the planned system.

Research Results

Quantitative Results: The LEP participants' mean pre-test score on basic cancer-related information was 54%. After listening to the messages, the mean post-test score improved dramatically, to 88%. The retention test was administered 7-10 days following the focus group; the mean score of 81% indicated that participants were able to retain a vast majority of health-related information without any further review or reinforcement.

The efficacy of the voice messages was also assessed using a series of Likert scale questions. Below are the main findings from the LEP participants (N=50):

- **96%** agreed or strongly agreed that "these messages help me gain a better understanding of the importance of cancer screening."
- **88%** felt that after having heard the messages about cancer screening, they would feel more comfortable getting screened.
- **100%** indicated favorably their intention to "encourage their friends and family members to sign up for and receive these health-related messages."

The healthcare provider participant-survey (N=26) also engendered positive results, as **100%** of providers surveyed indicated favorably that "sending automatic voice messages in patients' native languages is an effective way to communicate with patients who don't speak English;" and that they "would use the IVR system to communicate with patients" if it were available at their facility.

Qualitative Results: The LEP individuals expressed a strong desire to receive in-language appointment reminders via telephone; an exhaustive list of potential in-language messages was created, including pre-appointment instructions and procedural precautions, options to request an interpreter prior to appointment, and directions to the site of appointment. Participants preferred to receive messages from someone of concordant gender; the length of messages (range = 30sec-3min) was deemed satisfactory.

Barriers & Solutions

Currently we are implementing Phase II of this project. Any obstacles that may arise will be addressed at during the conference proceedings in October after we have initiated this phase.

Product(s) Developed from This Research

VoiceReach (a working title)